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1309471

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*April 18, 2005*

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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A  
FILING DATE.

APPLICATION NUMBER: 60/557,103

FILING DATE: *March 26, 2004*

RELATED PCT APPLICATION NUMBER: PCT/US05/09852



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032604  
21861 U.S. PTO

## PROVISIONAL APPLICATION COVER SHEET

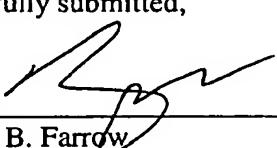
This is a request for filing a PROVISIONAL APPLICATION under 37 C.F.R. 1.53 (b)(2).

	Docket Number	1373US	Type a plus sign (+) inside this box →
X			
<b>INVENTOR(s)/APPLICANT(s)</b>			
Last Name	First Name	MI	Residence (City and either State or Foreign Country)
Bloom	Michael	E.	Oak Grove, Minnesota
Daley	Thomas	P.	Golden Valley, Minnesota
Brezny	Tera	D.	Lino Lakes, Minnesota
<b>TITLE OF THE INVENTION</b>			
Air Spray Gun Improvements in Nozzle and Aircap			
<b>CORRESPONDENCE ADDRESS</b>			
Graco Minnesota Inc. P. O. Box 1441 Minneapolis			
STATE	Minnesota	ZIPCODE	55440-1441
COUNTRY			
U.S.A.			
<b>ENCLOSED APPLICATION PARTS (check all that apply)</b>			
<input checked="" type="checkbox"/>	Specification	Number of Pages 5	<input type="checkbox"/> Small Entity Statement
<input checked="" type="checkbox"/>	Drawing(s)	Number of Sheets 4	<input type="checkbox"/> Other (specify)
<b>METHOD OF PAYMENT (check one)</b>			
<input type="checkbox"/>	A check or money order is enclosed to cover the Provisional filing fees		Provisional Filing Fee Amount (\$)
<input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge filing fees and credit Deposit Account Number: 07-1775		\$160.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

No.  
 Yes, the name of the U. S. Government agency and the Government contract number are:

Respectfully submitted,

  
 \_\_\_\_\_  
 Douglas B. Farrow

Date: March 26, 2004  
 Reg. No.: 28582

Additional inventors are being named on separately numbered sheets attached hereto.

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## Fee Transmittal for FY 2003

Effective 01/01/2003. Patent Fees are subject to annual revision.

 Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 160.00)

**Complete if Known**

Application Number	
Filing Date	
First Named Inventor	Bloom
Examiner Name	
Art Unit	
Attorney Docket No.	1373US

**METHOD OF PAYMENT (check all that apply)**
 Check     Credit card     Money order     Other     None
 Deposit Account:

Deposit	07-1775
Account Number	
Deposit Account	Graco Inc.
Name	

The Commissioner is authorized to: (check all that apply)

Charge fee(s) indicated below     Credit any overpayments  
 Charge any additional fee(s) during the pendency of this application  
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 to the above-identified deposit account

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity	Small Entity	Fee Description		Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1051	130	2051	65	Surcharge - late filing fee or oath
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet
1053	130	1053	130	Non-English Specification
1812	2,520	1812	2,520	For filing a request or ex parte reexamination
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action
1251	110	2251	55	Extension for reply within first month
1252	420	2252	210	Extension for reply within second month
1253	950	2253	475	Extension for reply within third month
1254	1,480	2254	745	Extension for reply within fourth month
1255	2,010	2255	1,005	Extension for reply within fifth month
1401	330	2401	165	Notice of Appeal
1402	330	2402	165	Filing a brief in support of an appeal
1403	290	2403	145	Request for oral hearing
1451	1,510	1451	1,510	Petition to institute a public use proceeding
1452	110	2452	55	Petition to revive - unavoidable
1453	1,330	2453	665	Petition to revive - unintentional
1501	1,330	2501	665	Utility issue fee (or reissue)
1502	480	2503	240	Design issue fee
1503	640	2503	320	Plant issue fee
1460	130	1460	130	Petitions to the Commissioner
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)
1806	180	1806	180	Submission of Information Disclosure Stmt
8021	40	8021	40	Recording each patent assignment per property (times number of properties)
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(e))
1810	770	2810	385	For each additional invention to be examined 37 CFR 1.129(b))
1801	770	2801	385	Request for Continued Examination (RCE)
1802	900	1802	900	Request for expedited examination of a design application

## Other Fee (Specify)

\*Reduced by Basic Filing Fee Paid

**SUBTOTAL (3)****1. BASIC FILING FEE**

Large Entity	Small Entity	Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)
1001	770	2001	385
1002	340	2002	170
1003	530	2003	265
1004	770	2004	385
1005	160	2005	80

SUBTOTAL (1) (\$ 160.00)

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

		Fee from Extra Claims below	Fee Paid
Total Claims	-20** =	x	=
Independent Claims	-3** =	x	=
Multiple Dependent			=

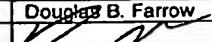
**Large Entity**

		Fee Description	
Fee Code	Fee (\$)	Fee Code	Fee (\$)
1202	18	2202	9
1201	86	2201	43
1203	290	2203	145
1204	86	2204	43
1205	18	2205	9

SUBTOTAL (2) (\$)

\*\* or number previously paid, if greater; For Reissues, see above

**SUBMITTED BY**

Name (Print/Type)	Douglas B. Farrow	Registration No (Attorney/Agent)	28582	Telephone	612-623-6769
Signature				Date	March 26, 2004

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket Number: 1373US

Inventor's Names and Addresses: Michael E. Bloom  
19961 Poppy Street  
Oak Grove, Minnesota 55303

Thomas P. Daley  
1940 Kyle Place  
Golden Valley, Minnesota 55422

Tera D. Brezny  
2325 Iverson Court  
Lino Lakes, Minnesota 55038

Citizenship: All United States of America

Title of Invention: Air Spray Gun Improvements in  
Nozzle and Aircap

Send all Correspondence to: Douglas B. Farrow  
Corporate Intellectual Property  
Counsel  
Graco Minnesota Inc.  
P. O. Box 1441  
Minneapolis, MN 55440

**AIR SPRAY GUN IMPROVEMENTS IN NOZZLE AND AIRCAP**

**TECHNICAL FIELD**

This application claims the benefit of US Application serial number \_\_\_\_\_  
5 \_\_\_\_\_, filed \_\_\_\_\_.

**BACKGROUND ART**

Airspray guns (including HVLP and compliant variants) for spraying paints and coatings are well known tools for achieving a high quality finish.

10

**DISCLOSURE OF THE INVENTION**

It is an object of this invention to provide such a spray gun which will yield improved spray results and which will be more consistently manufacturable to high standards.

15 The feeder passages in the aircap are slots which are significantly wider than the horn exit holes. This construction makes centerline offset much more forgiving by providing a consistent intersection of the passages. The feeder passages are also deeper in that they extent past the intersection point again making them more forgiving of irregularities.

Sealing and seating of the nozzle to the fluid inlet have also been improved over the prior art. Prior art designs allow the nozzle to float within the spray housing and seat firmly against the fluid inlet. In this prior art, attachment of the aircap to the spray housing did not adequately control concentricity of the two critical parts. In the instant invention, 5 o-rings seal the nozzle to the fluid inlet and allow the shoulder of the nozzle to seat squarely on the spray housing controlling angularity.

These and other objects and advantages of the invention will appear more fully from the following description made in conjunction with the accompanying drawings wherein like reference characters refer to the same or similar parts throughout the several 10 views.

#### **BRIEF DESCRIPTION OF DRAWINGS**

Figure 1 is a cross-section of the front end of the spray gun of the instant invention.

15 Figure 2 is a side view of the aircap of the prior art.

Figure 3 is a sectional view taken along line 3-3 of Figure 2.

Figure 4 is a side view of the aircap of the instant invention.

Figure 5 is a sectional view taken along line 5-5 of Figure 4.

Figure 6 is a side view of the aircap of the instant invention.

20 Figure 7 is a sectional view taken along line 7-7 of Figure 6.

**BEST MODE FOR CARRYING OUT THE INVENTION**

The front end 12 of an air spray gun 10 is shown in Figure 1. The general parts of the spray gun are the spray housing 14, a fluid inlet 16, a nozzle 18 and an aircap 20.

5       The feeder passages 22 in the aircap 20 are slots which are significantly wider than the horn exit holes. In the preferred embodiment, the slots 22 have a width of between two and three times the diameter or width of the horn exit holes 24. This construction makes centerline offset much more forgiving by providing a consistent intersection of the passages. The feeder passages 22 are also deeper in that they extent past the intersection  
10      point 26 again making them more forgiving of irregularities.

Sealing and seating of the nozzle 18 to the fluid inlet 16 have also been improved over the prior art. Prior art designs allow the nozzle to float within the spray housing and seat firmly against the fluid inlet. In this prior art, attachment of the aircap to the spray housing did not adequately control concentricity of the two critical parts. In the instant  
15      invention, o-rings 28 seal the nozzle 18 to the fluid inlet 16 and allow the shoulder 18b of the nozzle 18 to seat squarely on the spray housing controlling angularity. Fine threads 18a and 16a on the nozzle 18 and fluid inlet 16 respectively provide further control of angularity and concentricity.

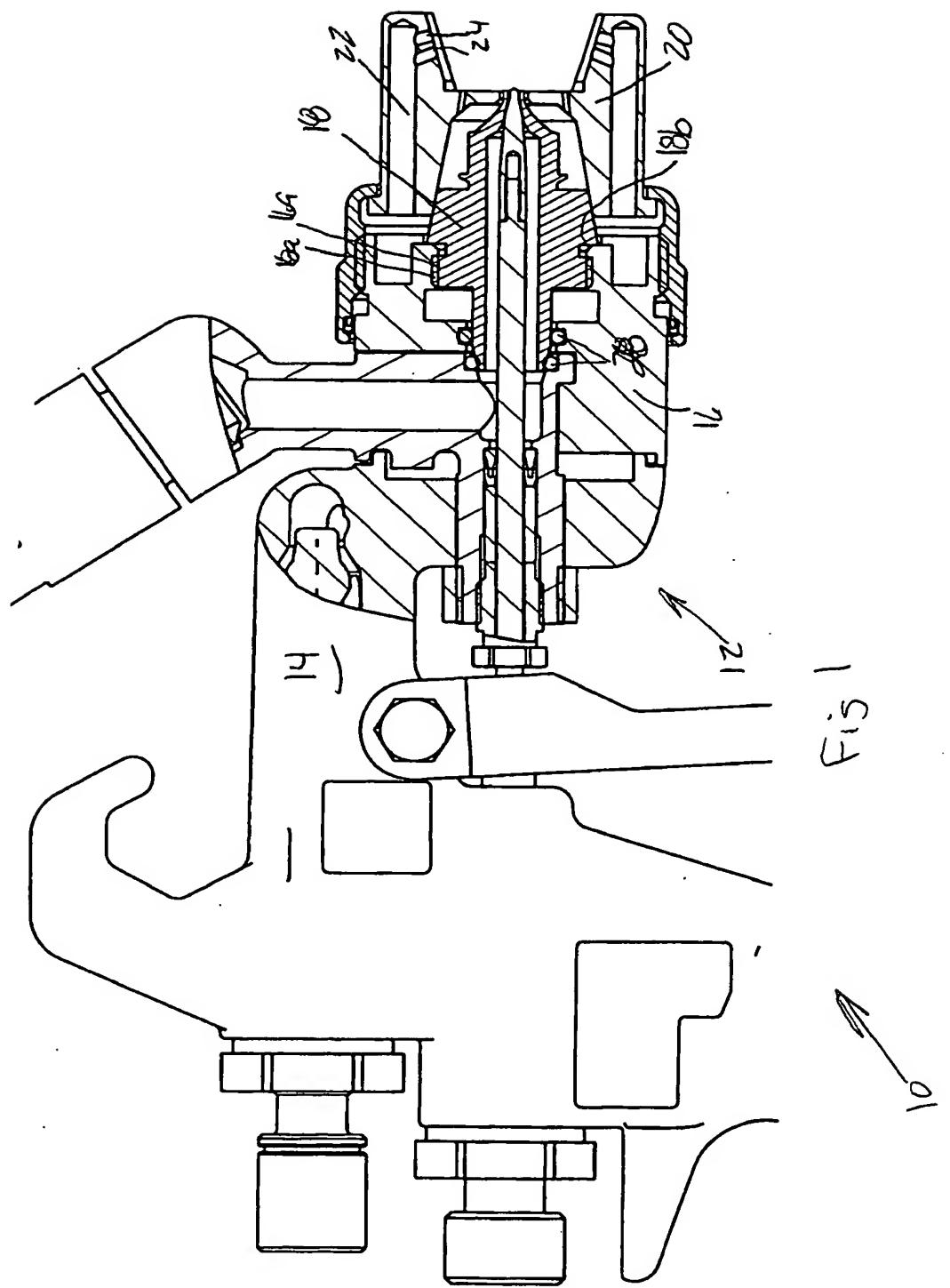
It is contemplated that various changes and modifications may be made to the  
20      spray gun without departing from the spirit and scope of the invention as defined by the following claims.

**CLAIMS**

1. In an aircap for an airspray gun having feeder passages which intersect with horn exit holes, said feeder passages and said horn exit holes each having widths, the improvement comprising said feeder passage widths being substantially greater than said 5 horn exit hole widths.
2. The aircap of claim 1 wherein said feeder passage widths are at least twice as wide as said horn exit hole widths
3. In an aircap for an airspray gun having feeder passages which intersect with horn exit holes, said feeder passages having depths, the improvement comprising said feeder 10 passage depths extending past the points of intersection with said horn exit holes.
4. In an air spray gun having a spray housing, a fluid inlet, a nozzle threaded into said fluid housing and an aircap, the improvement comprising a plurality of o-rings sealing said nozzle to said fluid inlet, said nozzle having a shoulder seating squarely on said spray housing to control angularity.

**ABSTRACT**

The feeder passages in the aircap of an air spray gun are slots which are significantly wider than the horn exit holes. This construction makes centerline offset much more forgiving by providing a consistent intersection of the passages. The feeder 5 passages are also deeper in that they extent past the intersection point again making them more forgiving of irregularities. Sealing and seating of the nozzle to the fluid inlet have also been improved over the prior art. In the instant invention, o-rings seal the nozzle to the fluid inlet and allow the shoulder of the nozzle to seat squarely on the spray housing controlling angularity.



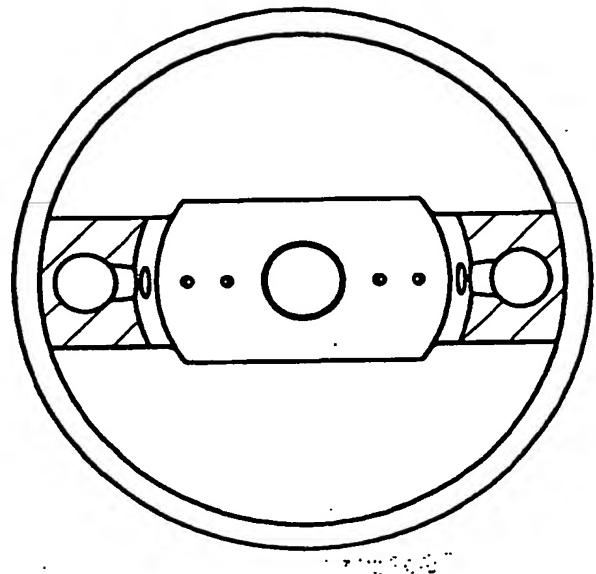


Fig 3  
PRIOR ART

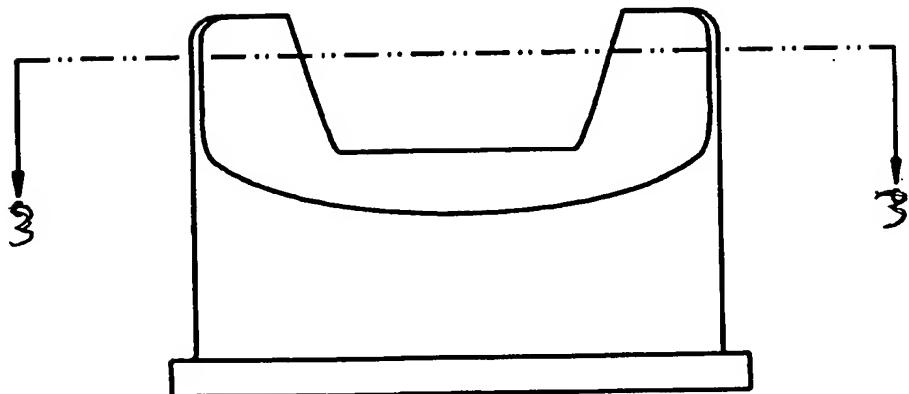


Fig 2  
PRIOR ART

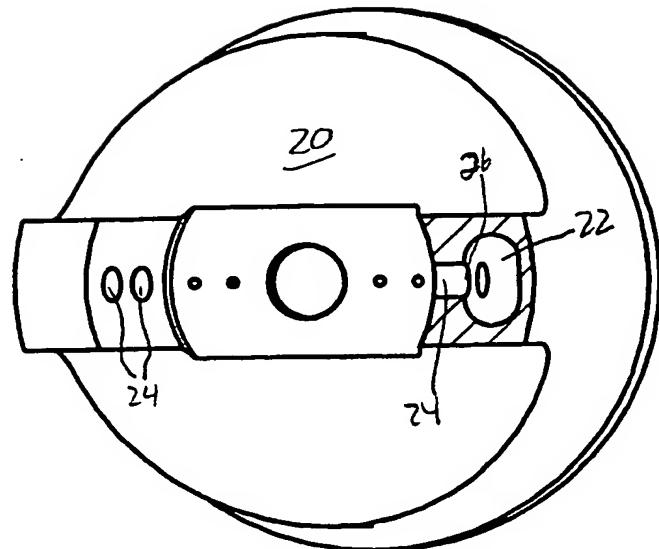


FIG 7

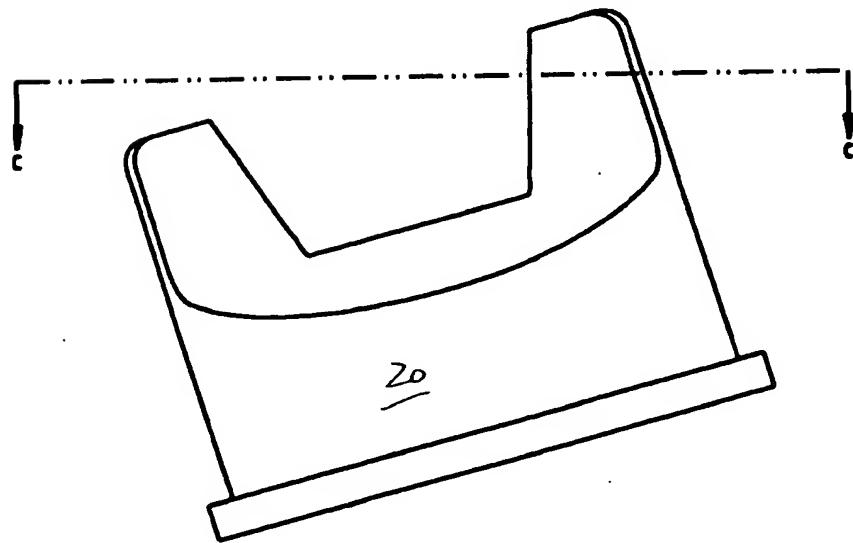


FIG 6

